QUARTERLY REPORT ON

(15) → CONTRACT NO DA 92 [illegible] 557 - FEC - 35580

INCLUSIVE DATES 1 October 1961 TO 31 December 1961

quarterly rept. 1 Oct - 31 Dec 61,



# SUBJECT OF INVESTIGATION

(6) →

BACTERIOLOGICAL, IMMUNOLOGICAL
AND
VIRAL STUDIES ON RECTAL MUCUS
IN
ENTERIC INFECTIONS
( SHIGELLOSIS, SALMONELLOSIS,
PATHOGENIC COLI INFECTIONS
AND VIRAL ENTERIC INFECTIONS ),

## RESPONSIBLE INVESTIGATOR

(10) → by Yasuzo Nakamizo,

~~Chief Doctor~~, Medical Section

(5) 876350 → Tokyo Metropolitan Ebara Infectious Disease Hospital (JAPAN).
~~895, Yukigaya, Ota-ku, Tokyo, Japan~~



U.S. Army Research & Development Group (9852) (Far East)

Office of the Chief of Research and Development
United States Army
APO 343

# BACTERIOLOGICAL, IMMUNOLOGICAL AND VIRAL STUDIES ON RECTAL MUCUS IN ENTERIC INFECTIONS
(SHIGELLOSIS, SALMONELLOSIS, PATHOGENIC COLI INFECTIONS AND VIRAL ENTERIC INFECTIONS)

**The purpose of investigation**
**under Contact No DA-92-557-FEC-35580**

1. Compare feces with mucus as the isolation source of the pathogenic microbe in enteric infections.

2. Estimate the serological potentialities of mucus in contrast with serum, bile and feces.

3. Measure antibacterial or antiviral resistance of mucus and reseaches for the agents which intensify antibacterial or antiviral resistance of mucus, such as antibiotic, gamma-globulin and vaccin, etc,.

4. Trace source of immunological potentialities in mucus.

Serological findings on serum and rectal mucus in bacillary dysentery patients obtained during the period of 1 Oct. - 31 Dec. 1961 are as follows.

1. Agglutinin titers against live Shigella antigen

a. Agglutinin titers of serum and rectal mucus aspirated from rectal cavity using a romanoscope in bacillary dysentery patients reached peak mostly in the second or third week of illness, but in a few cases within the first week of illness.

b. It was observed that the agglutinin titers in Shigella sonnei infected cases were generally lower than those of other shigella infected cases. (Figure 1 )

c. Remarkable differences in agglutinin titers were not recognized between the standard strains and the freshly isolated Shigella strains from bacillary dysentery patients.

d. Comparative studies of agglutinin titers in serum and mucus materials taken at the same time demonstrated that the serum agglutinin titer is higher than the mucus agglutinin titer in the first to third week of illness but the mucus titer is higher than the serum titer in the second to fourth week of illness. (Table 1 )

e. Attempts were made to see if the agglutinin activity of serum and mucus is affected when heated at 56°C 30 minutes or at 60°C for 3 minutes. The agglutinin titers remained intact even after heating. (Table 2 )

2. Agglutin titers of serum and mucus against heated antigen

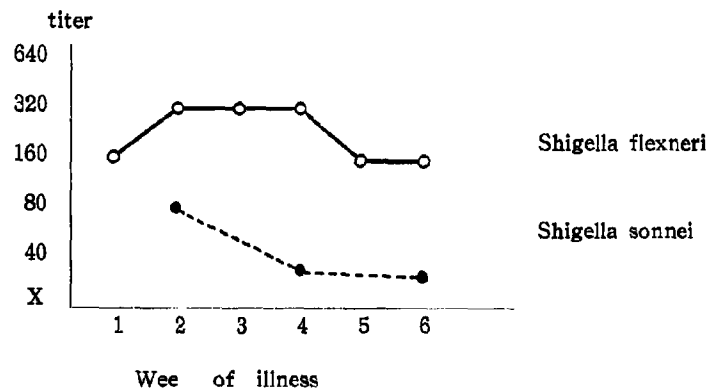
a. When Shigella antigen was heated at 100°C for 30 minutes, 60 minutes or 120 minutes, the agglutinin titer did not vary. (Table 2 )

b. It was clarified that the agglutinin titers of serum and mucus in shigella flexneri 2a and 2b and Shigella sonnei infected cases are lower than those of Shigella flexneri 3a and v·x infected cases.

c. Throughout the process of Shigellosis, distinct differences in agglutinin titers were not demonstrated between serum and mucus.

3. Agglutinin titers of serum and mucus against Escherichia coli antigen (live or heated) isolated from Shigella positive dysentery cases were usually lower than those against Shigella antigen.

Figure 1. Serum agglutinin titer against live Shigella antigen




able 1

| Comparison of agglutinin titer between serum and mucus aggainst live Shigella antigen | Week of illness | | | | |
|---|---|---|---|---|---|
| | 1 st | 2 nd | 3 rd | 4 th | 5 th |
| serum = mucus | 3 | 3 | 1 | 1 | 1 |
| serum > mucus | 5 | 7 | 11 | 1 | 1 |
| serum < mucus | 0 | 6 | 6 | 7 | 2 |

Table 2

| Material Shigella flexneri 3 a infected case | Inactivation | Shigella antigen | | | |
|---|---|---|---|---|---|
| | | live antigen | heated antigen | | |
| | | | 100° C 30 M. | 100° C 60 M. | 100° C 120 M. |
| serum | Not inactivated | 320 | 80 | 80 | 80 |
| | 56° C 30 M. | 640 | 160 | 160 | 320 |
| | 60° C 3 M. | 640 | 320 | 320 | 640 |
| mucus | Not inactivated | 1280 | 640 | 640 | 640 |
| | 56° C 30 M. | 1280 | 640 | 640 | 640 |
| | 60° C 3 M. | 1280 | 640 | 640 | 640 |

a